

# CHAPTER 51

## AEROSOLS

### No Proposed SFC Amendments

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**User note:**

**About this chapter:** Chapter 51 provides requirements for the prevention, control and extinguishment of fires and explosions in facilities where retail aerosol products are displayed or stored. It is concerned with both life safety and property protection from a fire; however, historically, aerosol product fires have caused property loss more frequently than loss of life. Requirements for storing aerosol products are dependent on the level of aerosol product, level of sprinkler protection, type of storage condition and quantity of aerosol products.

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#### SECTION 5101 GENERAL

**5101.1 Scope.** The provisions of this chapter, the *International Building Code* and NFPA 30B shall apply to the manufacturing, storage and display of aerosol products. Manufacturing of aerosol products using hazardous materials shall also comply with Chapter 50.

**5101.2 Permit required.** Permits shall be required as set forth in Section 105.6.

**5101.3 Safety Data Sheets.** Safety Data Sheet (SDS) information for aerosol products displayed shall be kept on the premises at an *approved* location.

**5101.4 Containers.** Metal aerosol containers shall be limited to a maximum size of 33.8 fluid ounces (1000 ml). Plastic aerosol containers shall be limited to a maximum 4 fluid ounces (118 ml) except as provided in Section 5104.1.1. Glass aerosol containers shall be limited to a maximum 4 fluid ounces (118 ml).

#### SECTION 5102 DEFINITIONS

**5102.1 Definitions.** The following terms are defined in Chapter 2:

**AEROSOL CONTAINER.**

**AEROSOL PRODUCT.**

Level 1 aerosol products.

Level 2 aerosol products.

Level 3 aerosol products.

**AEROSOL PRODUCT WAREHOUSE.**

**PROPELLANT.**

**RETAIL DISPLAY AREA.**

#### SECTION 5103 CLASSIFICATION OF AEROSOL PRODUCTS

**5103.1 Classification levels.** Aerosol products shall be classified as Level 1, 2 or 3 in accordance with Table 5103.1 and NFPA 30B. Aerosol products in cartons that are not identified in accordance with this section shall be classified as Level 3.

**TABLE 5103.1  
CLASSIFICATION OF AEROSOL PRODUCTS**

CHEMICAL HEAT OF COMBUSTION		AEROSOL CLASSIFICATION
Greater than (Btu/lb)	Less than or equal to (Btu/lb)	

0	8,600	1
8,600	13,000	2
13,000	—	3

For SI: 1 British thermal unit per pound = 0.002326 kJ/g.

**5103.2 Identification.** Cartons or outer packaging shall be identified on not fewer than one exterior side with the classification level of the aerosol products contained within the carton.

**5103.2.1 Aerosol products.** Cartons or outer packaging containing aerosol products in metal containers or glass and plastic containers 4 fluid ounces (118 ml) or less shall be clearly marked as follows:

LEVEL \_\_\_\_\_ AEROSOLS

**5103.2.2 Aerosol cooking spray products.** Cartons or outer packaging containing aerosol cooking spray products in metal containers shall be clearly marked as follows:

AEROSOL COOKING SPRAY

**5103.2.3 Plastic aerosol products.** Cartons or outer packaging containing aerosol products in plastic containers greater than 4 fluid ounces (118 ml) shall be clearly marked as follows:

PLASTIC AEROSOL 1 (or X)

## SECTION 5104 INSIDE STORAGE OF AEROSOL PRODUCTS

**5104.1 General.** The inside storage of Level 2 and 3 aerosol products shall comply with Sections 5104.2 through 5104.8 and NFPA 30B. Level 1 aerosol products and those aerosol products covered by Section 5104.1.1 shall be considered to be equivalent to a Class III commodity and shall comply with the requirements for palletized or rack storage in NFPA 13.

**5104.1.1 Plastic Level 1 aerosol products.** Aerosol products in plastic containers larger than 4 fluid ounces (118 ml), but not to exceed 33.8 fluid ounces (1000 ml), shall be allowed only where in accordance with this section. The commodity classification shall be Class III commodities, as defined in NFPA 13 where any of the following conditions are met:

1. Base product does not have a fire point where tested in accordance with ASTM D92, and nonflammable propellant.
2. Base product does not sustain combustion as tested in accordance with Appendix H, "Method of Testing for Sustained Combustibility," in DOTn 49 CFR Part 173, and nonflammable propellant.
3. Base product contains up to 20 percent by volume (15.8 percent by weight) of ethanol, isopropyl alcohol or a combination thereof in an aqueous mix, and nonflammable propellant.
4. Base product contains 4 percent by weight or less of an emulsified flammable liquefied gas propellant within an aqueous base. The propellant shall remain emulsified for the life of the product. Where such propellant is not permanently emulsified, the propellant shall be nonflammable.

**5104.1.2 Plastic aerosol X products.** Plastic aerosol X products are those products, in containers larger than 4 fluid ounces (118 ml), that do not meet the criteria provided in Section 5104.1.1.

**5104.1.2.1 Storage, use or handling.** The storage, use or handling of plastic aerosol X products shall be prohibited.

**5104.2 Storage in Groups A, B, E, F, I and R.** Storage of Level 2 and 3 aerosol products in occupancies in Groups A, B, E, F, I and R shall be limited to the following maximum quantities:

1. A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products.
2. A net weight of 500 pounds (227 kg) of Level 3 aerosol products.
3. A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.

The maximum quantity shall be increased 100 percent where the excess quantity is stored in storage cabinets in accordance with Section 5704.3.2.

**5104.2.1 Excess storage.** Storage of quantities exceeding the maximum quantities indicated in Section 5104.2 shall be stored in separate inside flammable liquid storage rooms in accordance with Section 5104.5.

**5104.2.2 Aerosol cooking spray products.** Storage of aerosol cooking spray products in A, B, E, F and R occupancies shall not be more than 1,000 pounds (454 kg) net weight.

**5104.3 Storage in general purpose warehouses.** Aerosol product storage in general purpose warehouses utilized only for warehousing-type operations involving mixed commodities shall comply with Section 5104.3.1, 5104.3.2. or 5104.3.3.

**5104.3.1 Nonsegregated storage.** Storage consisting of solid pile, palletized or rack storage of Level 2 and 3 aerosol products not segregated into areas utilized exclusively for the storage of aerosol products shall comply with Table 5104.3.1.

**TABLE 5104.3.1  
NONSEGREGATED STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS IN GENERAL PURPOSE WAREHOUSES<sup>b</sup>**

AEROSOL LEVEL	MAXIMUM NET WEIGHT PER FLOOR (pounds) <sup>b</sup>			
	Palletized or solid-pile storage		Rack storage	
	Unprotected	Protected <sup>a</sup>	Unprotected	Protected <sup>a</sup>
2	2,500	12,000	2,500	24,000
3	1,000	12,000	1,000	24,000
Combination 2 and 3	2,500	12,000	2,500	24,000

For SI: 1 foot = 304.8 mm, 1 pound = 0.454 kg, 1 square foot = 0.0929 m<sup>2</sup>.

a. Approved automatic sprinkler system protection and storage arrangements shall comply with NFPA 30B. Sprinkler system protection shall extend 20 feet beyond the storage area containing the aerosol products.

b. Storage quantities indicated are the maximum permitted in any 50,000-square-foot area.

**5104.3.2 Segregated storage.** Storage of Level 2 and 3 aerosol products segregated into areas utilized exclusively for the storage of aerosol products shall comply with Table 5104.3.2 and Sections 5104.3.2.1 and 5104.3.2.2.

**TABLE 5104.3.2  
SEGREGATED STORAGE OF LEVEL 2 AND 3 AEROSOL PRODUCTS IN GENERAL PURPOSE WAREHOUSES**

STORAGE SEPARATION	MAXIMUM SEGREGATED STORAGE AREA <sup>a</sup>		SPRINKLER REQUIREMENTS
	Percentage of building area (percent)	Area limitation (square feet)	
Separation area <sup>e, f</sup>	15	20,000	Notes b, c
Chain-link fence enclosure <sup>d</sup>	20	20,000	Notes b, c
1-hour fire-resistance-rated interior walls	20	30,000	Note b
2-hour fire-resistance-rated interior walls	25	40,000	Note b
3-hour fire-resistance-rated interior walls	30	50,000	Note b

For SI: 1 foot = 304.8 mm, 1 square foot = 0.0929 m<sup>2</sup>.

a. The maximum segregated storage area shall be limited to the smaller of the two areas resulting from the percentage of building area limitation and the area limitation.

b. Automatic sprinkler system protection in aerosol product storage areas shall comply with NFPA 30B and be approved. Building areas not containing aerosol product storage shall be equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1.

- c. Automatic sprinkler system protection in aerosol product storage areas shall comply with NFPA 30B and be approved. Sprinkler system protection shall extend a minimum 20 feet beyond the aerosol storage area.
- d. Chain-link fence enclosures shall comply with Section 5104.3.2.1.
- e. A separation area shall be defined as an area extending outward from the periphery of the segregated aerosol product storage area as follows.
  - 1. The limits of the aerosol product storage shall be clearly marked on the floor.
  - 2. The separation distance shall be not less than 25 feet and maintained clear of all materials with a commodity classification greater than Class III in accordance with Section 903.3.1.1.
- f. Separation areas shall only be permitted where approved.

**5104.3.2.1 Chain-link fence enclosures.** Chain-link fence enclosures required by Table 5104.3.2 shall comply with the following:

- 1. The fence shall be not less than No. 9 gage steel wire, woven into a maximum 2-inch (51 mm) diamond mesh.
- 2. The fence shall be installed from the floor to the underside of the roof or ceiling above.
- 3. Class IV and high-hazard commodities shall be stored outside of the aerosol storage area and not less than 8 feet (2438 mm) from the fence.
- 4. Access openings in the fence shall be provided with either self- or automatic-closing devices or a labyrinth opening arrangement preventing aerosol containers from rocketing through the access openings.
- 5. Not less than two *means of egress* shall be provided from the fenced enclosure.

**5104.3.2.2 Aisles.** The minimum aisle requirements for segregated storage in general purpose warehouses shall comply with Table 5104.3.2.2.

**TABLE 5104.3.2.2  
SEGREGATED STORAGE AISLE WIDTHS AND DISTANCE TO AISLES IN GENERAL PURPOSE WAREHOUSES**

STORAGE CONDITION	MINIMUM AISLE WIDTH (feet)	MAXIMUM DISTANCE FROM STORAGE TO AISLE (feet)
Solid pile or palletized <sup>a</sup>	4 feet between piles	25
Racks with ESFR sprinklers <sup>a</sup>	4 feet between racks and adjacent Level 2 and 3 aerosol product storage	25
Racks without ESFR sprinklers <sup>a</sup>	8 feet between racks and adjacent Level 2 and 3 aerosol product storage	25

For SI: 1 foot = 304.8 mm.

a. Sprinklers shall comply with NFPA 30B.

**5104.3.3 Aerosol cooking spray products.** Solid pile, palletized or rack storage of aerosol cooking spray products in a general purpose warehouse shall not be more than 2,500 pounds (1135 kg) net weight, unless protected in accordance with NFPA 30B.

**5104.4 Storage in aerosol product warehouses.** The total quantity of Level 2 and 3 aerosol products in a warehouse utilized for the storage, shipping and receiving of aerosol products shall not be restricted in structures complying with Sections 5104.4.1 through 5104.4.4.

**5104.4.1 Automatic sprinkler system.** Aerosol product warehouses shall be protected by an *approved* wet-pipe *automatic sprinkler system* in accordance with NFPA 30B. Sprinkler protection shall be designed based on the highest classification level of aerosol product present.

**5104.4.2 Pile and palletized storage aisles.** Solid pile and palletized storage shall be arranged so the maximum travel distance to an aisle is 25 feet (7620 mm). Aisles shall have a minimum width of 4 feet (1219 mm).

**5104.4.3 Rack storage aisles.** Rack storage shall be arranged with a minimum aisle width of 8 feet (2438 mm) between rows of racks and 8 feet (2438 mm) between racks and adjacent solid pile or palletized storage. Where

early suppression fast-response (ESFR) sprinklers provide automatic sprinkler protection, the minimum aisle width shall be 4 feet (1219 mm).

**5104.4.4 Combustible commodities.** Combustible commodities other than flammable and *combustible liquids* shall be permitted to be stored in an aerosol product warehouse.

**Exception:** Flammable and *combustible liquids* in 1-quart (946 ml) metal containers and smaller shall be permitted to be stored in an aerosol product warehouse.

**5104.5 Storage in inside flammable liquid storage rooms.** Inside flammable liquid storage rooms shall comply with Section 5704.3.7. The maximum quantities of aerosol products shall comply with Section 5104.5.1 or 5104.5.2.

**5104.5.1 Storage rooms of 500 square feet or less.** The storage of aerosol products in flammable liquid storage rooms less than or equal to 500 square feet (46 m<sup>2</sup>) in area shall not exceed the following quantities:

1. A net weight of 1,000 pounds (454 kg) of Level 2 aerosol products.
2. A net weight of 500 pounds (227 kg) of Level 3 aerosol products.
3. A combined net weight of 1,000 pounds (454 kg) of Level 2 and 3 aerosol products.

**5104.5.2 Storage rooms greater than 500 square feet.** The storage of aerosol products in flammable liquid storage rooms greater than 500 square feet (46 m<sup>2</sup>) in area shall not exceed the following quantities:

1. A net weight of 2,500 pounds (1135 kg) of Level 2 aerosol products.
2. A net weight of 1,000 pounds (454 kg) of Level 3 aerosol products.
3. A combined net weight of 2,500 pounds (1135 kg) of Level 2 and 3 aerosol products.

The maximum aggregate storage quantity of Level 2 and 3 aerosol products permitted in separate inside storage rooms protected by an *approved automatic sprinkler system* in accordance with NFPA 30B shall be 5,000 pounds (2270 kg).

**5104.6 Storage in liquid warehouses.** The storage of Level 2 and 3 aerosol products in liquid warehouses shall comply with NFPA 30B. The storage shall be located within segregated storage areas in accordance with Section 5104.3.2 and Sections 5104.6.1 through 5104.6.3.

**5104.6.1 Containment.** Spill control or drainage shall be provided to prevent the flow of liquid to within 8 feet (2438 mm) of the segregated storage area.

**5104.6.2 Sprinkler design.** Sprinkler protection shall be designed based on the highest level of aerosol product present.

**5104.6.3 Opening protection into segregated storage areas.** Fire doors or gates opening into the segregated storage area shall either be self-closing or provided with automatic-closing devices activated by sprinkler water flow or an *approved* fire detection system.

**5104.7 Storage in Group M occupancies.** Storage of Level 2 and 3 aerosol products and aerosol cooking spray products in occupancies in Group M shall comply with Table 5104.7. Retail display shall comply with Section 5106.

**TABLE 5104.7  
MAXIMUM QUANTITIES OF LEVEL 2 AND 3  
AEROSOL PRODUCTS AND AEROSOL COOKING  
SPRAY PRODUCTS IN RETAIL STORAGE AREAS**

MAXIMUM NET WEIGHT PER FLOOR (pounds)			
Floor	Nonsegregated storage <sup>a, b</sup>	Segregated storage	
		Storage cabinets <sup>b</sup>	Separated from retail area <sup>c</sup>
Basement	Not Permitted	Not Permitted	Not Permitted
Ground	2,500	5,000	Note d
Upper	500	1,000	Note d

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m<sup>2</sup>.

a. The total aggregate quantity on display and in storage shall not exceed the maximum retail display quantity indicated in Section 5106.3.

- b. Storage quantities indicated are the maximum permitted in any 50,000-square-foot area.
- c. The storage area shall be separated from the retail area with a 1-hour fire-resistance-rated assembly.
- d. See Table 5104.3.2.

**5104.8 Storage of aerosol cooking spray products.** *Aerosol cooking spray products* shall be permitted to be stored in a general purpose warehouse.

**5104.8.1 Mixed storage.** Where *aerosol cooking spray products* are mixed with other higher-hazard aerosol products, the provided isolation, storage height restrictions and protection shall be based on the highest-hazard aerosol product present.

**5104.8.2 Storage conditions.** The storage and handling of *aerosol cooking spray products* shall comply with this chapter and NFPA 30B.

## SECTION 5105 OUTSIDE STORAGE

**5105.1 General.** The outside storage of Level 2 and 3 aerosol products, including storage in temporary storage trailers, shall be separated from exposures in accordance with Table 5105.1.

**TABLE 5105.1  
DISTANCE TO EXPOSURES FOR OUTSIDE STORAGE  
OF LEVEL 2 AND 3 AEROSOL PRODUCTS**

EXPOSURE	MINIMUM DISTANCE FROM AEROSOL STORAGE (feet) <sup>a</sup>
Buildings	50
Exit discharge to a public way	50
Lot lines	20
Other outside storage	50
Public alleys, public ways, public streets	20

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. The minimum separation distance indicated is not required where exterior walls having a 2-hour fire-resistance rating without penetrations separate the storage from the exposure. The walls shall extend not less than 30 inches above and to the sides of Level 2 and 3 aerosol products.

## SECTION 5106 RETAIL DISPLAY

**5106.1 General.** This section shall apply to the retail display of 500 pounds (227 kg) or more of Level 2 and 3 aerosol products and aerosol cooking spray products.

**5106.2 Aerosol display and normal merchandising not exceeding 8 feet high.** Aerosol display and normal merchandising not exceeding 8 feet (2438 mm) in height shall be in accordance with Sections 5106.2.1 through 5106.2.5.

**5106.2.1 Maximum quantities in retail display areas.** Aerosol products and aerosol cooking spray products in retail display areas shall not exceed quantities needed for display and normal merchandising and shall not exceed the quantities in Table 5106.2.1.

**TABLE 5106.2.1  
MAXIMUM QUANTITIES OF LEVEL 2 AND 3 AEROSOL PRODUCTS AND AEROSOL COOKING SPRAY  
PRODUCTS IN RETAIL DISPLAY AREAS**

MAXIMUM NET WEIGHT PER FLOOR (pounds) <sup>b</sup>			
Floor	Unprotected <sup>a</sup>	Protected in accordance with Section 5106.2 <sup>a, c</sup>	Protected in accordance with Section 5106.3 <sup>c</sup>

Basement	Not Allowed	500	500
Ground	2,500	10,000	10,000
Upper	500	2,000	Not Allowed

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m<sup>2</sup>.

- a. The total quantity shall not exceed 1,000 pounds net weight in any one 100-square-foot retail display area.
- b. Per 25,000-square-foot retail display area.
- c. Minimum Ordinary Hazard Group 2 wet-pipe automatic sprinkler system throughout the retail sales occupancy.

**5106.2.2 Aerosol cooking spray storage and fire protection.** The storage and handling of *aerosol cooking spray products* shall comply with this chapter and NFPA 30B.

**5106.2.3 Display of aerosol products.** Level 2 and 3 aerosol products shall not be stacked more than 6 feet (1829 mm) high from the base of the aerosol product array to the top of the aerosol product array unless the aerosol products are placed on fixed shelving or otherwise secured in an *approved* manner. Where storage or retail display is on shelves, the height of such storage or retail display to the top of aerosol products shall not exceed 8 feet (2438 mm).

**5106.2.4 Combustible cartons.** Aerosol products located in retail display areas shall be removed from combustible cartons.

**Exceptions:**

1. Display areas that use a portion of combustible cartons that consist of only the bottom panel and not more than 2 inches (51 mm) of the side panel are allowed.
2. Where the display area is protected in accordance with Tables 6.4.2.7(a) through 6.4.2.7(l) of NFPA 30B, storage of aerosol products in combustible cartons is allowed.

**5106.2.5 Retail display automatic sprinkler system.** Where an *automatic sprinkler system* is required for the protected retail display of aerosol products, the wet-pipe *automatic sprinkler system* shall be in accordance with Section 903.3.1.1. The minimum system design shall be for an Ordinary Hazard Group 2 occupancy. The system shall be provided throughout the retail display area.

**5106.3 Aerosol product display and normal merchandising exceeding 8 feet high.** Aerosol product display and merchandising exceeding 8 feet (2438 mm) in height shall be in accordance with Sections 5106.3.1 through 5106.3.3.

**5106.3.1 Maximum quantities in retail display areas.** Aerosol products in retail display areas shall not exceed quantities needed for display and normal merchandising and shall not exceed the quantities in Table 5106.2.1, with fire protection in accordance with Section 5106.3.2.

**5106.3.2 Automatic sprinkler protection.** Aerosol product display and merchandising areas shall be protected by an *automatic sprinkler system* based on the requirements set forth in Tables 6.4.2.7(a) through 6.4.2.7(l) of NFPA 30B and the following:

1. Protection shall be based on the highest level of aerosol product in the array and the packaging method of the storage located more than 6 feet (1829 mm) above the finished floor.
2. Where using the cartoned aerosol products tables of NFPA 30B, uncartoned or display-cut Level 2 and 3 aerosol products shall not be permitted more than 6 feet (1829 mm) above the finished floor.
3. The design area for Level 2 and 3 aerosol products shall extend not less than 20 feet (6096 mm) beyond the Level 2 and 3 aerosol product display and merchandising areas.
4. Where ordinary and high-temperature ceiling sprinkler systems are adjacent to each other, noncombustible draft curtains shall be installed at the interface.

**5106.3.3 Separation of Level 2 and 3 aerosol product areas.** Separation of Level 2 and 3 aerosol product areas shall comply with the following:

1. Level 2 and 3 aerosol product display and merchandising areas shall be separated from each other by not less than 25 feet (7620 mm). See Table 5106.2.1.
2. Level 2 and 3 aerosol product display and merchandising areas shall be separated from flammable and *combustible liquids* storage and display areas by one or a combination of the following:
  - 2.1. Segregating areas from each other by horizontal distance of not less than 25 feet (7620 mm).

2.2. Isolating areas from each other by a noncombustible partition extending not less than 18 inches (457 mm) above the merchandise.

2.3. In accordance with Section 5106.5.

3. Where Item 2.2 is used to separate Level 2 or 3 aerosol products from flammable or *combustible liquids*, and the aerosol products are located within 25 feet (7620 mm) of flammable or *combustible liquids*, the area below the noncombustible partition shall be liquid tight at the floor to prevent spilled liquids from flowing beneath the aerosol products.

**5106.4 Maximum quantities in storage areas.** Aerosol products in storage areas adjacent to retail display areas shall not exceed the quantities in Table 5106.4.

**TABLE 5106.4**  
**MAXIMUM STORAGE QUANTITIES FOR STORAGE AREAS ADJACENT TO RETAIL DISPLAY OF LEVEL 2 AND 3 AEROSOL PRODUCTS**

MAXIMUM NET WEIGHT PER FLOOR (pounds)			
Floor	Unseparated <sup>a, b</sup>	Separated	
		Storage Cabinets <sup>b</sup>	1-hour Occupancy Separation
Basement	Not Allowed	Not Allowed	Not Allowed
Ground	2,500	5,000	In accordance with Sections 6.4.4.3 and 6.4.4.4 of NFPA 30B
Upper	500	1,000	In accordance with Sections 6.4.4.3 and 6.4.4.4 of NFPA 30B

For SI: 1 pound = 0.454 kg, 1 square foot = 0.0929 m<sup>2</sup>.

a. The aggregate quantity in storage and retail display shall not exceed the quantity limits for retail display.

b. In any 50,000-square-foot area.

**5106.5 Special protection design for Level 2 and 3 aerosol products adjacent to flammable and combustible liquids in double-row racks.** The display and merchandising of Level 2 and 3 aerosol products adjacent to flammable and *combustible liquids* in double-row racks shall be in accordance with Section 5106.3.3 or Sections 5106.5.1 through 5106.5.8.

**5106.5.1 Fire protection.** Fire protection for the display and merchandising of Level 2 and 3 aerosols in double-row racks shall be in accordance with Table 7.5.1 and Figure 7.5.1 of NFPA 30B.

**5106.5.2 Cartoned aerosol products.** Level 2 and 3 aerosol products displayed or merchandised more than 8 feet (2438 mm) above the finished floor shall be in cartons.

**5106.5.3 Shelving.** Shelving in racks shall be limited to wire mesh shelving having uniform openings not more than 6 inches (152 mm) apart, with the openings comprising not less than 50 percent of the overall shelf area.

**5106.5.4 Aisles.** Racks shall be arranged so that aisles not less than 7½ feet (2286 mm) wide are maintained between rows of racks and adjacent solid-piled or palletized merchandise.

**5106.5.5 Flue spaces.** Flue spaces in racks shall comply with the following:

1. Transverse flue spaces—Nominal 3-inch (76 mm) transverse flue spaces shall be maintained between merchandise and rack uprights.
2. Longitudinal flue spaces—Nominal 6-inch (152 mm) longitudinal flue spaces shall be maintained.

**5106.5.6 Horizontal barriers.** Horizontal barriers constructed of minimum ¾-inch-thick (10 mm) plywood or minimum 0.034-inch (0.086 mm) (No. 22 gage) sheet metal shall be provided and located in accordance with Table 7.5.1 and Figure 7.5.1 of NFPA 30B where in-rack sprinklers are installed.

**5106.5.7 Class I, II, III, IV and plastic commodities.** Class I, II, III, IV and plastic commodities located adjacent to Level 2 and 3 aerosol products shall be protected in accordance with NFPA 13.

**5106.5.8 Flammable and combustible liquids.** Class I, II, III A and III B Liquids shall be allowed to be located adjacent to Level 2 and 3 aerosol products where both of the following conditions are met:



1. Class I, II, IIIA and IIIB liquid containers: Containers for Class I, II, IIIA and IIIB liquids shall be limited to 1.06-gallon (4 L) metal-relieving and nonrelieving style containers and 5.3-gallon (20 L) metal-relieving style containers.
2. Fire protection for Class I, II, IIIA and IIIB Liquids: Automatic sprinkler protection for Class I, II, IIIA and IIIB liquids shall be in accordance with Chapter 57.

**SECTION 5107**  
**MANUFACTURING FACILITIES**

**5107.1 General.** Manufacturing facilities shall be in accordance with NFPA 30B.

